

PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION

Improvements in or relating to Sliding Clasp Fasteners

We, CARR FASTENER COMPANY LIMITED, a British Company, of Nottingham Road, Stapleford, Nottinghamshire, and JOHN HENRY KOHLER, a citizen of the United States of America, of Carr Fastener Co. Ltd., Stapleford, Nottinghamshire, do hereby declare the nature of this invention to be as follows:—

10 This invention relates to sliding clasp fasteners of the kind wherein two flexible stringers are adapted to be connected by sets of interlocking fastener elements controlled by a slider.

15 The slider is usually moved over the fastener element to connect and disconnect them but if one of the stringers is first removed from the slider, the stringers can be separated by a lateral pull more speedily than by operating the slider in the normal way. In this case, however, great difficulty is experienced in re-assembling the separated stringer with the slider unless the stringers have completely separable ends.

25 Owing to this fact the separation of stringers of the closed end type by a lateral pull has heretofore been avoided and the use of such fasteners for certain articles where a quick opening of the fastener is desired has been prevented.

30 For example in the case of parachute carriers for airmen which comprise a container which must be ripped open by a rip cord to allow the pilot parachute and finally the main parachute to be dragged out time would be saved and the opening of the main parachute accelerated if a more rapidly opening fastener could be devised for the container.

40 It is an object of this invention to provide a fastener of the kind referred to which can be used on parachute carriers or containers to give an extremely rapid opening and which is also applicable to various other purposes.

45 According to the invention the connected ends of the stringers of a sliding clasp fastener are arranged to permit limited relative movement between them, when the fastener is opened, to enable the ends to be moved apart sufficiently for the separate stringer to be re-assembled with the slider. The ends of the

stringers may be provided with end plates pivoted together at the end remote from the fastener elements or alternatively the end plates may be connected by a pin and slot connection which permits relative lateral movement between the ends.

55 In cases where the fastener is expressly designed to be opened by a lateral pull, as in parachute carriers, suitable means are provided for holding the stringers in interlocking engagement against accidental separation. For example an easily removable or breakable pin, or a press button fastener may be employed and operated by a pull cord or in any other suitable manner. Alternatively the construction of one or more of the fastener elements at the free ends of the stringers may be such that an extra strong interlocking engagement is obtained which will only be broken by the exertion of a fairly strong lateral pull.

60 In one construction embodying the invention one of the stringers of a fastener is provided with two end plates riveted to opposite sides of the stringer tape and having spaced portions projecting inwardly beyond the line of fastener elements to form a U-shaped pocket adapted to receive an end plate on the other stringer. The ends of the plates remote from the fastener elements have extensions which embrace and are pivoted to a flat metal plate riveted to the end of the other stringer. A slider is mounted on the first mentioned stringer and is retained by an end top stop which is arranged that when the fastener is in closed position, the whole of the slider is located above the end fastener element of the second stringer to ensure that the opening of the fastener by a lateral pull is not impeded. If desired the arrangement may permit the slider to be completely disengaged from the second stringer when the fastener is closed.

65 To reassemble the separated stringer with the slider, the end plates are moved angularly about the pivot and the slider brought into position to fit over the pocket formed by the projecting portions of the end plates. The end plate of the other stringer is then pivoted to bring it into

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position to extend through the spaced sides of the slider into the said pocket on the end of the first stringer. The fastener elements are then in correct alignment for operation by the slider to close the fastener.

One form of device for preventing accidental separation of the stringers comprises a plate attached to the stringer carrying the slider at a point beneath the slider's closed position. One member of a stud and socket fastening is mounted on the plate and the cooperating member is

carried by a strip of flexible material one end of which is attached to the same 15 stringer as the plate. When the members of the stud and socket fastening are engaged the flexible strip extends across the fastening elements adjacent to the slider and prevents opening by a lateral 20 pull.

Dated this 21st day of April, 1939.

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London, W.C.2,
Agents for the Applicants.

COMPLETE SPECIFICATION

Improvements in or relating to Sliding Clasp Fasteners

We, CARR FASTENER COMPANY LIMITED, a British Company, of Nottingham Road, Stapleford, Nottinghamshire, and JOHN HENRY KOHLER, a citizen of the United States of America, of Carr Fastener Co. Ltd., Stapleford, Nottinghamshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to sliding clasp fasteners of the kind wherein two flexible stringers are adapted to be connected by sets of interlocking fastener elements controlled by a slider.

The slider is usually moved over the fastener element to connect and disconnect them but it has been found that if one of the stringers is first removed from the slider the stringers can be separated by a lateral pull more speedily than by operating the slider in the normal way.

It is an object of this invention to provide a fastener of the kind referred to which can be used to give an extremely rapid opening and which is applicable for various purposes.

For example in the case of parachute carriers for airmen which include a fastener which must be ripped open to allow the pilot parachute and finally the main parachute to be dragged out time would be saved and the opening of the main parachute accelerated if a more rapidly opening fastener could be devised for the container.

According to the present invention a sliding clasp fastener comprises two stringers each provided with fastener elements, a slider connecting said elements when operated in one direction, and means permitting disconnection of said elements by separating strain independently of longitudinal movement of said slider when the slider is at one end of the fastener in fully closed position.

Means such as a breakable thread or cord are provided for holding the fastener 70 elements in connected relation against accidental separation.

The fastener according to the present invention is applicable to all purposes in which sliding clasp fasteners are normally used but is particularly useful when used in combination with a parachute attached to a jacket or the like for preventing the movement of the parachute into open position.

To enable the invention to be fully understood it will now be described with reference to the accompanying drawings in which:—

Fig. 1 is a view of the sliding clasp fastener attached to the opening of a casing or carrier of a parachute, the stringers being shewn partly separated.

Fig. 2 is a view of one form of means for ensuring the correct relative assembly of the stringers, the stringers being separated.

Fig. 3 is a view of the means shewn in Fig. 2 but in closed position.

Fig. 4 is a fragmentary view of the back of an airman's jacket provided with fasteners according to the present invention.

Fig. 5 is a view shewing the lower end of one of the fasteners according to Fig. 4, the stringers being partly separated, and

Fig. 6 is a view shewing the separated upper ends of the fasteners according to Fig. 4.

As shewn in Fig. 1 the parachute casing 1 is provided with an opening through which the parachute is withdrawn when it is to be opened. The edges 2, 3 of the opening are provided with cooperating fastener elements 4 which are inter-engaged by the longitudinal movement of a slider 5. The stringers 6, 7 are adapted to be separated independently of the movement of the slider, on the 115

exertion of a lateral pull on the rip cord 8. To permit this separation, the stringer 7 has a member 9 terminating in a stop 10 which enables the slider 5 to be moved into a position out of engagement with the fastener elements, the stop 10 preventing complete removal of the slider from the stringer 7. The stringer 6 has a plate 11 having a bead 12, which is thinner than the gap usually present between the front and rear faces of the slider to permit the plate being withdrawn laterally from the slider. Accidental separation of the two stringers is prevented by a cord 13 which is threaded through an eyelet 14 in each stringer and the ends knotted or otherwise secured. A press button fastener or any other means may be provided in place of the cord.

The arrangement is such that a sufficiently strong manual pull on the rip cord 8 will fracture the cord or break the sealing means and the continued pull will separate the stringers 6, 7 and open the casing to permit the withdrawal of the parachute.

To assist in the correct reassembly of the fastener elements of the respective stringers the connected end of the stringer 6 is provided with a plate 15 which is bent to embrace both sides of the stringer to which it is secured by rivets. The stringer 7 has a plate 16 riveted to each side the plates embracing and being pivotally connected to the plate 15 and being spaced to form a pocket for the edge of the plate 15. To reassemble correctly the separated stringers the end plates are moved angularly about the pivot 17 and the slider 5 brought into position to fit over the pocket formed by the plates 16. The plate 15 is then pivoted to bring it into position to extend through the spaced sides of the slider into the position shewn in Fig. 3. The fastener elements are then in correct alignment for operation of the slider to close the fastener.

In Figs. 4 to 6 of the accompanying drawings 18 is the back of an airman's jacket or suit to which two pairs of flaps 19, 19a and 20, 20a are arranged on opposite sides. The flaps of each pair are provided with sets of fastener elements 21 to enable the flaps of a pair to be fastened together at their edges. Straps 22 extending over the shoulders of the jacket and connected at the lower ends to a parachute (not shewn) are disposed beneath the flaps 19, 19a and 20, 20a when the fastener elements are in connected position. The fastener elements are brought into closed position by the operation of a slider 23 and the accidental separation of the stringers is prevented by the cords 24

(only one being shewn) passing through eyelets 25. As in the previously described arrangement the stringers are adapted to be separated independently of the longitudinal movement of the slider upon the cords 24 being broken, for example by an upward pull of the straps 22 due to movement of the parachute or parachute pack. To permit the stringers being readily reassembled after separation one stringer 26 is provided with a cage 27 adapted to receive the slider and correctly position it, while the other stringer 26a is provided with an end plate 28 having a bead 29. When the slider is positioned in the cage 27 the bead 29 is inserted into the slider and the plate 28 slipped through the gap between the front and rear faces of the slider body and through a slot 27a in the side of the cage 27. When the plate 28 is fully inserted the two sets of fastener elements are in correct relative position and the slider can be operated to bring them into connected relation. It will be understood that the cord 24 may be replaced by a stud and socket or any other fastening means.

The sliding clasp fastener according to the present invention is applicable for various uses but is particularly useful in connection with a releasable fastening for use with a parachute or parachute harness where the rapidity and quickness of opening is of paramount importance.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A sliding clasp fastener comprising two stringers, each provided with fastener elements, a slider for connecting said elements when operated in one direction and means permitting disconnection of said elements by separating strain independently of longitudinal movement of said slider when said slider is at one end of the fastener in fully closed position.

2. A fastener according to claim 1 wherein means is provided for holding the fastener elements of the stringers in connected relation, said means being breakable when force is exerted on one of said stringers to separate it laterally from the other of said stringers thereby to permit disconnection of said fastener elements by said separating strain.

3. A fastener according to claims 1 or 2 wherein the breakable means is a cord.

4. A fastener according to any one of the preceding claims having a connecting device at one end of said fastener for guiding said slider into connecting relationship to said fastener elements after the stringers have been separated.

5. A fastener according to claim 4 wherein the connecting device has one side shaped to receive said slider and locate said slider in position laterally to receive a second side of said connecting device and to bring the opposed adjacent fastening elements on said stringers into position to be engaged by subsequent engaging movement of said slider.
6. A fastener according to claim 4 wherein the connecting device comprises two sides pivoted together, one side presenting a relatively narrow portion adapted to enter the slider from the side, the other side presenting a shoulder for holding the slider against lateral separation therefrom.
7. A fastener according to any one of the preceding claims wherein a stop member providing a limiting abutment for the slider is arranged on one of said stringers, said stop being located at a position above the fastener elements on the opposite stringer.
8. A fastener according to claim 7 wherein the other stringer from that having the stop member has a stiffening member disposed adjacent to the edge of the stringer substantially opposite the stop member, said stiffening member and said stop member having portions normally disposed within said slider when said slider is adjacent said limiting abutment, and said stiffening member being movable laterally through a side of said slider upon disengagement of said stringers.
9. A fastener according to claim 6 wherein one of the sides presents a portion adapted to enter the slider from the lower end and a shoulder for holding the slider against lateral separation therefrom, and the other of the sides presents a narrow portion adapted to enter the slider from the side.
10. The combination of a support, such as a jacket, a parachute secured thereto and means normally preventing the withdrawal of the parachute into open position, including a sliding clasp fastener as claimed in any one of the pre-

ceding claims.

11. The combination according to claim 10 wherein the parachute is connected to the jacket or the like by straps which are normally disposed beneath flaps on the jacket which are normally connected edge to edge by the sliding clasp fastener to prevent the parachute moving into its open position.

12. The combination according to claim 10 or 11 wherein means is provided for holding the two stringers of the fastening against separation, said means being adapted to be freed by a manual pull.

13. The combination according to claim 12 wherein the holding means comprises a cord threaded through eyelets on each of the stringer tapes.

14. A parachute device comprising a casing having a parachute contained therein, an opening in said casing to permit passage of said parachute there-through, a multiple fastener closure for said opening, said fastener comprising two stringers attached to said casing adjacent the sides of said opening and carrying interengaging fastener elements, a slider for connecting said elements when operated in one direction, and means permitting disconnection of said elements by separating strain independently of longitudinal movement of said slider when said slider is at fully closed position at one end of said fastener.

15. A sliding clasp fastener constructed and arranged substantially as described with reference to Figs. 1 to 3 of the accompanying drawings.

16. A sliding clasp fastener arranged on an airman's jacket or suit and adapted to operate substantially as described with reference to Figs. 4 to 6 of the accompanying drawings.

Dated this 7th day of December, 1939.

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25, SOUTHAMPTON BUILDINGS,
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[This Drawing is a reproduction of the Original on a reduced scale.]

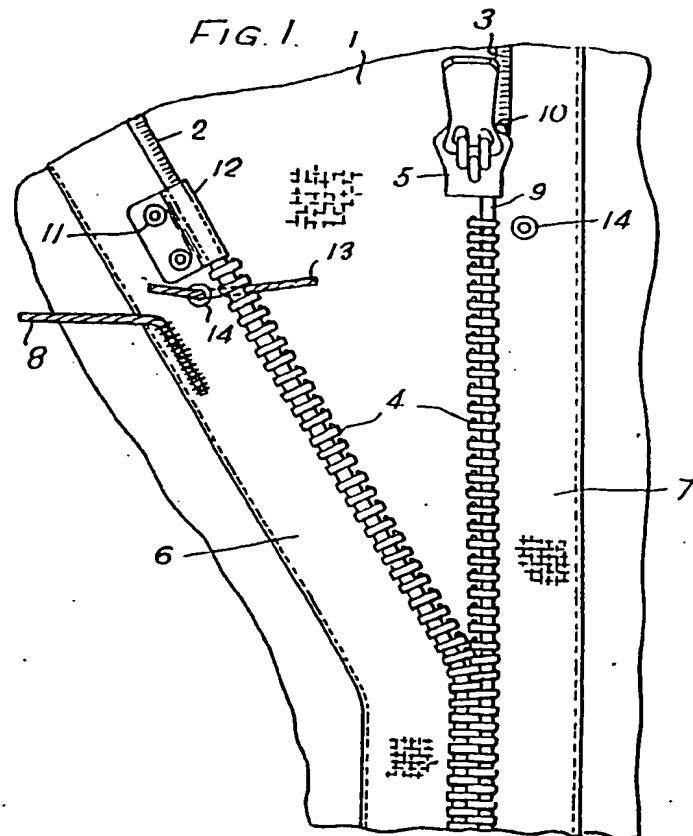


FIG. 2.

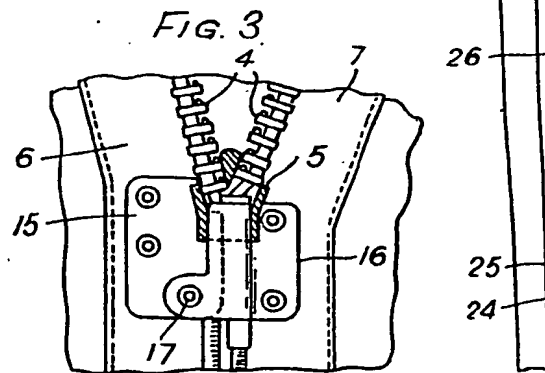
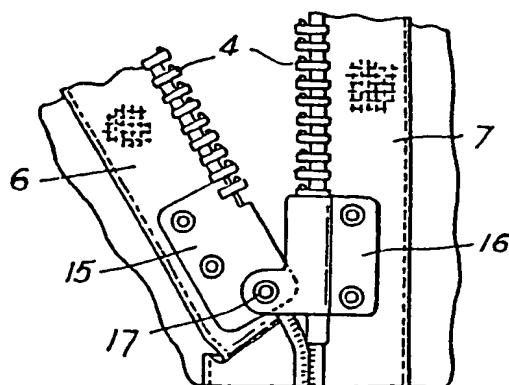
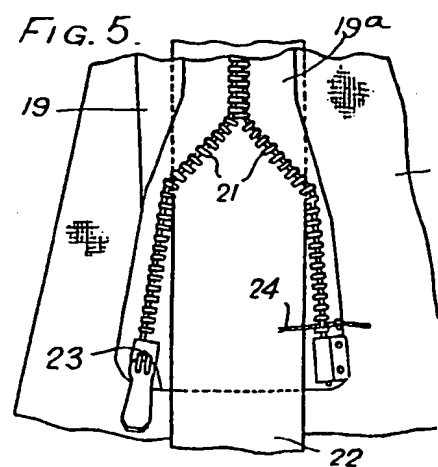
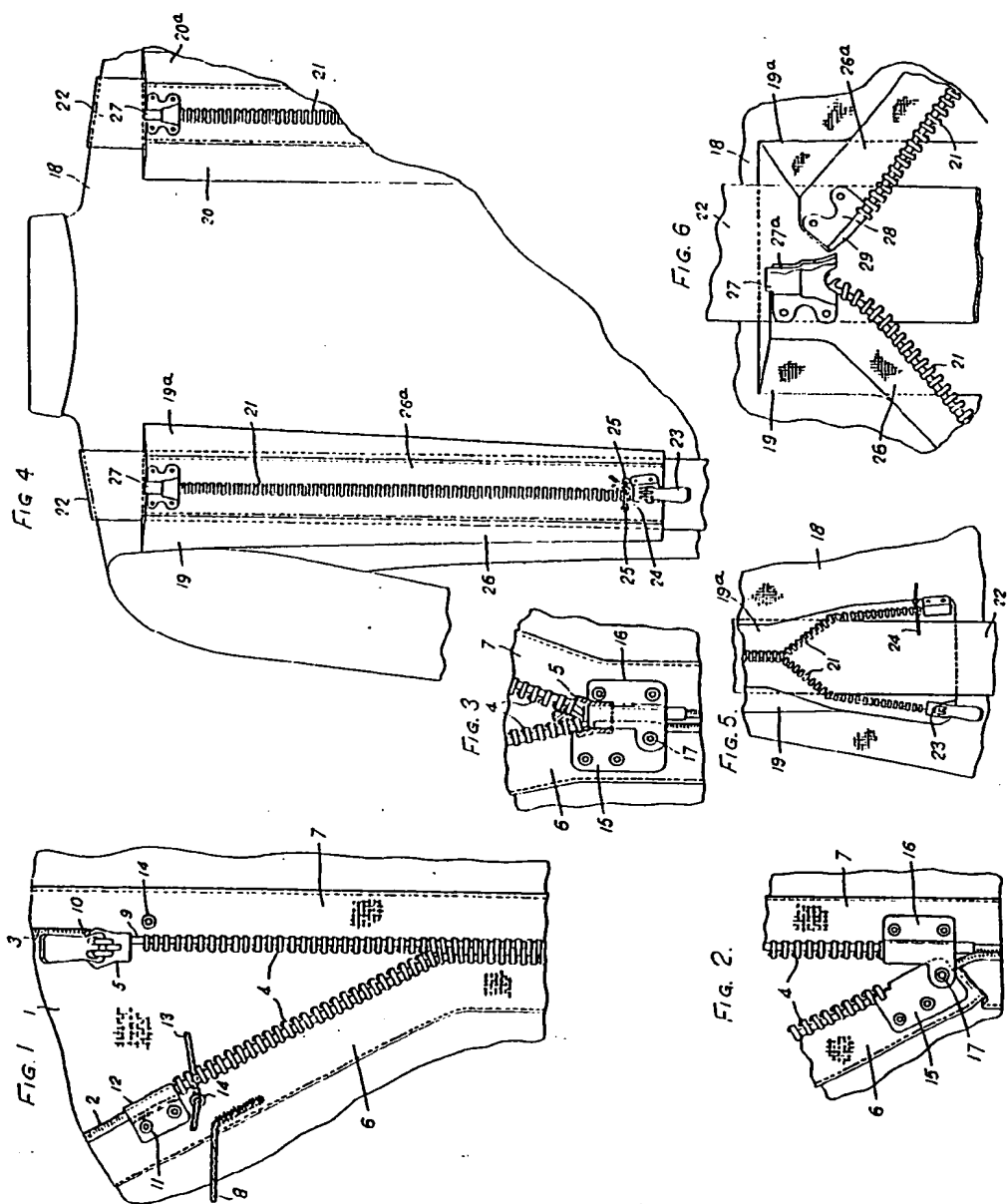


FIG. 5.





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